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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,657	11/13/2003	Jiebo Luo	87007DMW	2589

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Pamela R. Crocker  
Patent Legal Staff  
Eastman Kodak Company  
343 State Street  
Rochester, NY 14650-2201

EXAMINER
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KRASNIC, BERNARD

ART UNIT	PAPER NUMBER
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2624

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09/11/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/712,657	<b>Applicant(s)</b> LUO ET AL.	
	<b>Examiner</b> BERNARD KRASNIC	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. The amendment filed 5/30/2008 have been entered and made of record.
2. The application has pending claim(s) 1-3 and 5-7.
3. The Applicant's arguments with respect to claims 1-3 and 5-7 have been considered but are moot in view of the new ground(s) of rejection because the Applicant has amended independent claim(s) 1.
4. Applicant's arguments filed 5/30/2008 have been fully considered but they are not persuasive.

Applicant alleges, "It is clear from the examiner's comments ..." in page 4 through "The examiner actually admits ..." in page 4, and states respectively that the prior art reference Vivarelli doesn't suggest a Bayesian network configured to produce a result with evidence missing. Firstly, the Examiner doesn't admit that Vivarelli's network is not a Bayesian neural network, the Examiner does believe it is a Bayesian neural network as is seen in the title of Vivarelli and throughout the reference of Vivarelli. The Examiner only stated that the Vivarelli reference doesn't explicitly state or suggest that the Bayesian neural network is configured to produce a result with evidence missing. Although the reference doesn't explicitly state that the Bayesian neural network is configured to produce a result with evidence missing, it is a known feature of the Bayesian network as is even noted by the inventor Jiebo Luo in the Declaration under

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37 C.F.R. 1.132 filed 10/09/2007, where Luo clearly states that a conventional Bayesian network is trained to be able to perform when data of input information is missing [see Declaration, page 1, Point 7]. Therefore the inventor clearly admits that the amended limitation is conventional in that a conventional Bayesian network may perform with evidence missing. However, to expedite prosecution, the Examiner has found a new reference by the inventor dated two years prior to the filing of the current application [Luo, J. – “Indoor vs Outdoor classification of consumer photographs using low-level and semantic features” – IEEE, 2001, pages 745-748, *this reference was cited by the Examiner in a PTO-892 dated 2/08/2007*] which teaches using a Bayesian network [instead of a Bayesian trained neural network as discussed in Vivarelli] for scene classification (see Luo, paragraph "In this paper, we propose a Bayesian ..." in page 745, Section 2 in page 746). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tretter's method using the Luo teachings of making a final classification using a combination of both content based and meta data based classification through nodal neural analysis (see Tretter, paragraph [0009] at lines 1-11, paragraph [0010] at lines 1-5) by replacing it with a Bayesian network in order to further improve the accuracy of the classification by applying the appropriate probability contribution weights to the two classifiers (Tretter's content based and meta-data based classification). Therefore claims 1-3 and 5-7 are still not in condition for allowance and are still not patentably distinguishable over the prior art references. Further art rejection discussions are addressed below in the Art Rejection section of this Office Action.

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The Applicant alleges, “The examiner further states ...” in page 6 through “Finally, as previously noted by applicants ...” in page 6, and states respectively that no one had disclosed or suggested using a Bayesian network to solve the problem addressed by the present invention and that without acknowledging this problem or any other that would lead one to consider the use of Bayesian network to classify images as claimed, such a proposed modification of Tretter et al can only be based on hindsight knowledge. As discussed above, the Luo reference discloses using the Bayesian network to improve scene classification and therefore gives motivation to replace Tretter's neural network classifier with a Bayesian network in order to improve Tretter's image classification. Therefore claims 1-3 and 5-7 are still not in condition for allowance and are still not patentably distinguishable over the prior art references.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tretter (US 2002/0140843 A1, as applied in previous Office Action) in view of Luo (“Indoor vs Outdoor classification of consumer photographs using low-level and semantic features” – IEEE, 2001, pages 745-748, *this reference was cited by the*

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*Examiner in a PTO-892 dated 2/08/2007 and the article was provided to the Applicant with the Non-Final Office Action dated on 2/08/2007).*

Re Claim 1: Tretter discloses a method for scene classification / content-based and metadata based classification (see abstract, lines 1-3) of a digital image comprising the steps of (a) extracting one or more pre-determined camera metadata tags / meta data from the digital image (see abstract, lines 6-10, paragraph [0008], lines 9-12, meta-data may consist of but not limited to an automatic gain setting, film speed, shutter speed, white balance, aperture/lens index, focusing distance, date, time, and flash/no flash [at least 9 different meta-data's]); (b) obtaining an estimate of image class / meta data based classification based on (1) the extracted camera metadata tags / meta data (see abstract, lines 1-3, 10-14, paragraph [0008], lines 15-20) and not (2) image content features (paragraph [0008] shows that the meta-data classifier only uses data capturing attributes such as shutter speed, focusing distance, date and time, flash/no flash), thereby providing a metadata-based estimate / meta-data based classification; (c) obtaining, separately from the metadata-based estimate (paragraphs [0003]-[0004] and [0009] shows that the content based classification only uses content of the subject data such as color and contrast) another estimate of image class / content based classification of the digital image based on (1) image content features / content based data (see abstract, lines 1-3, 10-14, paragraph [0008], lines 15-20) and not (2) the extracted camera metadata tags (paragraphs [0003]-[0004] and [0009] show that the content based classification only uses content of the subject data such as color and contrast), thereby providing an image content-based estimate / content based

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classification; and (d) producing a final estimate of image class / combination of both results of the content based classifier and meta data based classifier of the digital image based on a combination of the metadata-based estimate / meta data based classification and the image content-based estimate / content based classification (see abstract, lines 10-14, paragraph [0008], lines 15-20), wherein the combination in step (d) is obtained by using a network / nodal neural network configured to produce the final estimate of image class with a specific pre-determined set of evidence (see paragraph [0032], lines 6-11).

However, Tretter fails to explicitly suggest that the network is a Bayesian network configured to produce the final estimate of image class still capable of producing the final estimate of image class if evidence is missing from the pre-determined set of evidence.

Luo discloses that the network is a Bayesian network / Bayesian network configured to produce the final estimate of image class / scene classification still capable of producing the final estimate of image class if evidence is missing / conditional independence relationships from the pre-determined set of evidence (see Luo, paragraph "In this paper, we propose a Bayesian ..." in page 745, Section 2 in page 746, conditional independence relationships among variables allowing each network link be independent of other links to train the entire net of links separately).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tretter's method using Luo's teachings of making a final classification using a combination of both content based and meta data

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based classification through nodal neural analysis (see Tretter, paragraph [0009], lines 1-11, paragraph [0010], lines 1-5) by replacing it with a Bayesian network in order to further improve the accuracy of the classification by applying the appropriate probability contribution weights to the two classifiers (Tretter's content based and meta-data based classification).

Further, the inventor Jiebo Luo in the Declaration under 37 C.F.R. 1.132 filed 10/09/2007, clearly states that a conventional Bayesian network is trained to be able to perform when data of input information is missing [see Declaration, page 1, Point 7]. Therefore the inventor clearly admits that the amended limitation is conventional in that a conventional Bayesian network may perform with evidence missing.

Re Claim 2: Tretter further discloses the metadata extracted in step (a) includes one or more of exposure time, aperture, shutter speed, brightness value, subject distance / focusing distance and flash fired / flash - no flash (see abstract, lines 6-10, paragraph [0008], lines 9-12).

Re Claim 3: Tretter further discloses the image content features in step (c) include one or more of color, texture and semantic features (see paragraph [0003], lines 7-8, paragraph [0008], lines 1-3, paragraph [0025], lines 6-11).



As to claim 5, the claim is the corresponding computer readable medium for storing a program claim to claim 1 respectively. The discussions are addressed with regard to claim 1.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tretter, as modified by Luo, and in further view of Schroder et al (US 7,020,330 B2, as applied in previous Office Action). The teachings of Tretter as modified by Luo have been discussed above.

However, Tretter as modified by Luo fails to disclose or fairly suggest applying a customized image enhancement procedure to the digital image in response to the final estimate of image class of the digital image.

Schroder discloses applying a customized image enhancement procedure / color correction process for assigned image class (3) to the digital image in response to the final estimate of image class (2) of the digital image (see Fig. 1, abstract, lines 8-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Tretter's method, as modified by Luo, by using Schroder's teachings by including the application of applying a customized image enhancement procedure after image classification in order to apply the color correction process which is most likely for a particular image belonging to a particular selected image class (see Schroder, col. 3, lines 10-12).

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8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tretter as modified by Luo and Schroder, and further in view of Cooper ("A novel approach to color cast detection and removal in digital images" - SPIE - Jan 2000, vol 3963, pages 167-177, as applied in previous Office Action). The teachings of Tretter as modified by Luo and Schroder have been discussed above.

However, Tretter as modified by Luo and Schroder fails to disclose or fairly suggest the customized image enhancement procedure is color balancing and the customized image enhancement procedure includes retaining or boosting brilliant colors in images classified as sunset scenes and removing warm-colored cast from indoor images classified as tungsten-illuminated scenes.

Cooper discloses the customized image enhancement procedure is color balancing / color cast due to illuminant sources removal and the customized image enhancement procedure includes retaining or boosting brilliant colors in images classified as sunset scenes / cast removal from outdoor sunset conditions and removing warm-colored cast from indoor images / cast removal from indoor natural images classified as tungsten-illuminated / unusual illuminant scenes (see title, abstract, line 1, section 7 - RESULTS, paragraph 1, lines 5-6, paragraph 2, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Tretter's method, as modified by Luo and Schroder, using Cooper's teachings by including the color correcting color cast removal feature in order to correct the color cast which is encountered in indoor and outdoor

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images such as sunset images (see Cooper, section 7 - RESULTS, paragraph 1, lines 5-6).

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Krasnic whose telephone number is (571) 270-1357. The examiner can normally be reached on Mon-Thur 8:00am-4:00pm and every other Friday 8:00am-3:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bernard Krasnic  
September 9, 2008

/Samir A. Ahmed/  
Supervisory Patent Examiner, Art Unit 2624